

CLAIMS

I claim:

1. A potable water circulation system for circulating water in a municipal water distribution network comprising a water main and a branch pipe extending from said water main and having a dead end therein at a distance from said water main and an intermediate region between said dead end and said water main, said potable water circulation system comprising:
pump means having a nominal capacity and conduit means connected to said pump means, to said dead end and to said intermediate region for circulating water from said intermediate region to said dead end and back into said intermediate region, and
means to cause a minimal circulation of water in said branch pipe when a demand in said branch pipe is lower than said nominal capacity, and means to reverse said circulation when said demand exceeds said nominal capacity.
2. The potable water circulation system as claimed in **claim 1**, wherein said intermediate region is a takeoff region of said branch pipe from said water main.
3. The potable water circulation system as claimed in **claim 1**, wherein said conduit means is an auxiliary pipe laid along said branch pipe.
4. The potable water circulation system as claimed in **claim 1**, further comprising a filter mounted in said conduit means for filtering water in said conduit means and said branch pipe.

5. The potable water circulation system as claimed in **claim 1**, wherein said conduit means comprises at least one flow control valve to control the flow of water into said dead end.
6. The potable water circulation system as claimed in **claim 1**, wherein said branch pipe comprises a fire hydrant lateral and said conduit means has a connection extending to a hydrant base in said fire hydrant lateral.
7. The potable water circulation system as claimed in **claim 6**, further comprising means to cause a minimal circulation of water in said fire hydrant lateral when a demand in said fire hydrant lateral is lower than said nominal capacity, and means to reverse said circulation when said demand exceed said nominal capacity.
8. The potable water circulation system as claimed in **claim 1**, wherein said branch pipe comprises a side-street pipe having a side-street dead end and said conduit means has a connection extending to said side-street dead end.
9. The potable water circulation system as claimed in **claim 8**, further comprising means to cause a minimal circulation of water in said side-street pipe when a demand in said side-street pipe is lower than said nominal capacity, and means to reverse said circulation when said demand exceed said nominal capacity.
10. The potable water circulation system as claimed in **claim 1**, wherein said branch pipe has a segment valve therein and said flow control valve is located adjacent said segment valve.

11. A potable water circulation system for circulating water in a municipal water distribution network comprising a water main and a branch pipe extending from said water main and having a dead end therein at a distance from said water main, said potable water circulation system comprising:
pump means having a nominal capacity and conduit means connected to said pump means, to said dead end and to said water main for circulating water from said water main, to said dead end and back into said water main, and
means to cause a minimal circulation of water in said branch pipe when a demand in said branch pipe is lower than said nominal capacity, and means to reverse said circulation when said demand exceeds said nominal capacity.
12. The potable water circulation system as claimed in **claim 11**, wherein said conduit means is an auxiliary pipe smaller in size than said branch pipe and laid along said branch pipe.
13. A method for preventing water stagnation in a municipal water distribution system comprising a pipe segment having a source end and an extremity, said method comprising the steps of adding water into said extremity and causing a flow of water in said pipe segment from said extremity toward said source end.
14. The method as claimed in **claim 13**, wherein said extremity is a fire hydrant and said pipe segment is a fire hydrant lateral.
15. The method as claimed in **claim 13**, wherein said extremity is a dead end.

16. A method for preventing water stagnation in a municipal water distribution piping network having an extremity therein, comprising the step of moving water from inside said extremity through a water treatment system and back into said piping network.
17. The method as claimed in **claim 16**, wherein said water treatment system is any of, or a combination of, a filter, a chlorination treatment system, a de-chlorination system, a fluorination system, a UV treatment system, or an ozone treatment system.
18. The method as claimed in **claim 16**, wherein said extremity is a dead end or a fire hydrant.
19. A potable water circulation system for circulating water in a water distribution network of a building having a water inlet pipe; said potable water circulation system comprising:
 - a loop pipe connected to said water inlet pipe;
 - a pump mounted in series in said loop pipe to circulate water in said loop pipe;
 - a header having U-shaped flow path connected in series with said loop pipe and a take-off portion extending away from said U-shaped flow path;
 - a partitioned pipe extending from said take-off portion; said partitioned pipe having an end, a partition therein and a first gap in said partition near said end;
 - a water outlet connected to said end of said partitioned pipe;
 - said header having a divider therein aligned with said partition, and extending near said partition;
 - such that a portion of a flow of water in said loop pipe can be circulated near said water outlet.

20. A fire hydrant lateral for installation in a municipal water distribution network for inducing a movement of water in a base portion of a fire hydrant from a flow of water in said municipal water distribution network, said fire hydrant lateral comprising a source end, a butterfly valve near said source end, a partition therein and a flow diverter extending inside and outside said source end, said partition being aligned with said flow diverter and with an axis of a blade in said butterfly valve.